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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SONG, SARAH U

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/902,883

Applicant(s)

RUAN ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

1. Applicant's communication filed on March 18, 2003 has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims, are persuasive and the rejections based upon prior art made of record in the previous Office Action are withdrawn. Claims 9, 11, 14 and 15 have been amended. Claims 1-20 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 8, 9, 12, 14-16 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Edwards et al. (U.S. Patent 6,389,189 newly cited). Edwards et al. disclose a device for transmitting optical signals, said device comprising an optical input accepting optical signals; a control device (inherent) directing said optical signals between said at least one optical input and an optical output; and a channel located between said optical input and said optical output confining said optical signals to a predetermined path (see Figure 16). Edwards et al. further disclose the control device to comprise at least one mirror element (or channel mirror) 20 configured to reflect and direct said optical signal within said device or said channel. Regarding claims 8 and 15, the channel additionally comprises at least one reflective wall. Since optical waveguide function by total internal reflection, the waveguide wall is considered to be reflective.

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Furthermore, regarding claim 9, Edwards et al. disclose a reflective wall 50 within the channel, the reflective wall comprising gold, aluminum chrome or the like (column 10, lines 27-29).

Regarding claim 14, Edwards et al. also disclose the method of forming a reflective portion of a switching element comprising a cantilever (e.g. in Figures 5A-H); conducting an optical signal through channels that confine said optical signal to predetermined paths (e.g. in Figure 15); and switching said cantilever such that said reflective portion is placed in the path of said optical signal when said optical signal is desired at a first output (reflecting state output in Figure 15), and such that said reflective portion is placed out of the path of said optical signal when said optical signal is desired at a second output (through state output in Figure 15) on a second one of said predetermined paths. Regarding claim 16, it is noted that the channel mirror 20 directs the optical signal away from the reflective wall (the input waveguide wall and the reflective wall 50).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-7, 10, 11, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards et al. in view of Judy et al. (previously cited). Edwards et al. disclose a mirror element comprising a cantilever (see Figures). Edwards et al. additionally suggest magnetic actuators as a viable alternative (column 8, lines 64-67). Specifically regarding claim 13, Edwards et al. additionally disclose a channel mirror 20' in optical communication with

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mirror element 20, wherein said channel mirror is configured to receive said optical signal and to direct said optical signal through said channel (see Figure 1). Edwards et al. do not specifically disclose a cantilever having a magnetically sensitive portion and a reflective portion, wherein electromagnetic signals are configured to induce a torque in the cantilever. Judy et al. disclose a plurality of mirror elements or reflectors (102), i.e. magnetic plate with a mirror coating (column 5, lines 15-16), each comprising a cantilever having a magnetically sensitive portion and a reflective portion, wherein each of said cantilevers is configured to be switched between a first state and a second state by one of a plurality of electromagnetic signals (i.e. magnetic field 118) consisting of magnetic signals generated by conductors 302 or electrostatic signals generated by electrodes 112 and 114. It is noted that the magnetic field 118 induces a torque in the cantilever. Therefore, one of ordinary skill in the art would have found it obvious to incorporate the magnetic actuation of Judy et al. into the switch of Edwards et al. One of ordinary skill in the art would have been motivated to make such a modification to combine the features of electrostatic forces and magnetic forces within the same microstructure, as suggested by Edwards et al.

Response to Arguments

6. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 703-306-5799. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at

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telephone number 703-308-0956 or to the technical support staff supervisor at telephone number 703-308-3072.

Handwritten signature
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June 1, 2003

Handwritten signature
HEMANG SANCHAV
PRIMARY EXAMINER